REMARKS

Reconsideration and allowance of the subject application are respectfully requested.

Pursuant to the Examiner's suggestion, the heading "Background of the Invention" has been amended to "Background and Summary."

Claims 1-4, 7-11, 14, 22, 23, 31, and 32 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,719,883 to Ayanoglu. This rejection is respectfully traversed.

To establish that a claim is anticipated, the Examiner must point out where each and every limitation in the claim is found in a single prior art reference. *Scripps Clinic & Research Found. v. Genentec, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991). Every limitation contained in the claims must be present in the reference, and if even one limitation is missing from the reference, then it does not anticipate the claim. *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565 (Fed. Cir. 1986). Ayanoglu fails to satisfy this rigorous standard.

Ayanoglu discloses an adaptive ARQ/FEC technique for multitone transmission. Ayanoglu explains:

> Multitone transmission is a popular and widely used data communication technique which involves the transmissions of blocks of information which, individually, comprise a plurality of words of information and parity checking bits that are transmitted at a plurality of frequencies.

Column 1, lines 18-23. A cyclic redundancy checking (CRC) calculation is iteratively performed "over frequency" on the words of a transmission block:

> using a select number of iteratively retransmitted parity bits...the iterative retransmission of parity bits increases the probability that the detected transmission errors of a transmission block are correctable by FEC, and minimizes the need for retransmissions of entire blocks of information bits.

Column 2, lines 1-8. Further details with respect to the main embodiment are described in column 2, where a transmitter transmits a transmission block comprising a plurality of words simultaneously over a plurality of frequency channels. The receiver first performs CRC checking *over time* on the:

> words comprised of information bits in the transmission block to detect the presence of transmission errors. If any transmission error is detected, the processor performs CRC over frequency on the same words of the transmission block to detect any frequency channel at which a transmission error occurs.

Column 2, lines 9-18. If the number of parity bits in the block does not allow FEC of the erroneous words, requests are sent to the transmitter to retransmit additional parity bits. The receiver uses these additional parity bits to perform CRC *over frequency* on:

> subsets of the set of words comprising the transmission block. Transmission of additional parity bits is performed for only a certain number of times per block. After that, the receiver requests that the transmitter retransmit all words in any subset of a particular transmission block which cannot be corrected by FEC.

Column 2, lines 34-35. So first parity bits are retransmitted and then all the information and parity bits in a word that cannot be corrected are retransmitted.

Ayanoglu keeps a record of those frequency channels in which a transmission errors are occurring so that data bits are not sent over those frequency channels. Column 2, lines 38-42.

Ayanoglu fails to disclose the combination of features in independent claim 1, which now incorporates the subject matter of canceled claim 2. Claim 1 recites:

> a data packet includes a first type of bits corresponding to actual information bits and a second type of bits corresponding to parity bits, the information bits being more important to decoding than the parity bits.

The Examiner's rejection on claim 1 is based on Ayanoglu's "two types of parity checking bits: vertical parity bits/words and [presumably the first type of bits] and information words/bits which consists of informational bits and horizontal parity checking bits [presumably the second type of bits]." The problem with the Examiner's claim reading onto Ayanoglu is that claim 1 now requires that the first, more important bits be *actual information* bits and the second, less important *bits be parity* bits.

Claim 1 also recites that:

> a negatively acknowledged packet triggers a retransmission of the parity bits to be used in the subsequent decoding operation at the receiver.

In column 10, lines 46-55 referred to by the Examiner, Applicants were unable to find an explicit teaching of a negative acknowledgement signal that triggers a retransmission. The Examiner is presumably assuming that a negative acknowledgement was sent to the transmitter to trigger the retransmission.

Claim 1 also cites "detecting an absence of a data packet" and "sending a lost signal to the transmitter rather than a negative acknowledgement." Applicants find no teaching in Ayanoglu of detecting the absence of a data packet. Step 250 in Figure 3A referred to by the Examiner, asks whether the number of "failing frequency channels in transmission block" is greater than a "number of correctable erasures." Block 250 does not relate to the above quoted features. The Examiner refers to column 2, lines 1-9. Those lines describe performing CRC operations on received words to detect transmission errors. There is no detecting an absent packet. Rather, a "present" packet is detected, and CRC operations are performed on it. The Examiner refers to column 5, line 24 to column 6, line 57. This text relates to determining "running sums." As explained in column 5, lines 49-53, the running sum is used to determine which the frequency channels are presently not experiencing transmission errors and therefore are useful for transmitting data bits. This running sum channel selection process has nothing to do with detecting the absence of a data packet or with sending a lost signal rather than a negative acknowledgement. The Examiner also refers to the timeout process 600 that is performed as part of the retransmission of a data block. As explained in column 11, lines 36-41, a block will be retransmitted:

> only for a predetermined number of times, after which, if a retransmission block is not correctly received, the processor 36 performs a time-out process 600. Acknowledgement sent by the transceiver 30 is specifically for the purpose to indicate that processing of the transmitted data bits is proceeding.

Column 11, lines 60-62. Acknowledging that data processing is proceeding has nothing to do with detecting the absence of a data packet or sending a lost signal.

If the Examiner elects to maintain rejection of this claim based on Ayanoglu, the Examiner is respectfully requested to point where Ayanoglu detects the absence of a data packet and where Ayanoglu sends a lost signal rather than a negative acknowledgement signal, where the lost signal and the negative acknowledgement are two different signals.

Lacking these features, Ayanoglu also fails to disclose "in response to the sending of the lost signal, receiving from the transmitter a first retransmission of the information bits of the data packet." As explained, Ayanoglu does not disclose sending a lost signal when the absence of a data packet is detected at the receiver. And when Ayanoglu requests retransmission because an error is detected in a transmission, Ayanoglu's transmitter initially only retransmits additional parity bits to the receiver rather than the information bits. See column 2, lines 19-37.

Lacking multiple features of claim 1, Applicants respectfully submit that the anticipation rejection of claim 1 is improper and should be withdrawn. Although there are dependent claim features that additionally distinguish from Ayanoglu, since Ayanoglu fails to teach all of the features of independent claim 1, those dependent claim features are not addressed specifically here. However, the Examiner's attention is directed, for example, claim 4 which recites "if the decoding of the first retransmission is not successful, sending a negative acknowledgement to the transmitter." The Examiner has failed to identify two different signals corresponding to a lost signal and a negative

acknowledgement signal. Nor has the Examiner identified in Ayanoglu first sending a lost signal, rather than a negative acknowledgement, and if the decoding of the first retransmission is not successful, sending a negative acknowledgement.

Claim 9 recites that each encoded data packet includes:

> a first group of bits corresponding to actual information bits and a second group bits, corresponding to parity bits, where the information bits are more important to decoding than the data packet then parity bits.

This language is similar to that discussed above with respect to claim 1. The Examiner's rejection groups claim 9 along with claim 1, even though the claims are quite different. It is difficult to follow the Examiner's rejection therefore, if the Examiner elects to maintain a rejection of claim 9, Applicants request that the Examiner separately read claim 9 onto Ayanoglu.

With respect to the first step of decoding the packet to produce an interim decoding result, the Examiner refers to column 2, lines 12-19. This text refers to making CRC calculations on the words over time and over frequency. It is not seen where the decoding result, the CRC calculation, is compared to a threshold. The Examiner refers to column 2, lines 1-19, but Applicants find no threshold comparison of the CRC calculation. The text in column 5 and 6, relied on by the Examiner, describes thresholds T_1 and T_2,, but they relate to "running sums," and not to an interim data block decoding result, which the Examiner identified in column 2 as being a CRC result. Those running sums are used to determined which of the frequency channels will be used for future transmissions.

Nor does Ayanoglu teach that "if the interim decoding result indicates an error in the received packet and the interim decoding result is at or below the threshold, sending a negative acknowledgement signal to trigger a retransmission of the parity bits" coupled with "if the interim decoding result is not above the threshold, sending a lost signal rather than a negative acknowledgement signal." If the running sum threshold is exceeded for a particular frequency channel, that frequency channel is not used for future transmission. The Examiner fails to point out where Ayanoglu teaches comparing the CRC to a threshold and sending one of two different types of signals back to the transmitter based on the result of that threshold comparison. Moreover, explained as above in conjunction with claim 1, Ayanoglu first retransmits additional parity bits and not information bits.

Lacking multiple features of independent claim 9, the anticipation rejection should be withdrawn.

Regarding claim 14, the Examiner seems to ignore the definition of "systematic" set forth in the specification. Page 3 describes the difference between systematic and non-systematic for error correction channel encoders. It is explained that systemic bits correspond to original information bits. To be clear on this point, claim 14 has been amended refer to "systematic information bits." This is not believed to be a narrowing amendment because systematic was clearly defined as original information bits in the specification. Moreover, the last lines of claim 14 have been amended to recite that the control is configured to retransmit the systematic information bits rather than the actual are transmitted since this is an apparatus claim. This also is not a narrowing amendment.

Ayanoglu does not disclose:

> when a negative acknowledgement is received, parity bits are retransmitted over the communications channel to the receiver, and when a lost signal is received or no acknowledgement or negative acknowledgement is received, the controller is configured to retransmit the systematic information bits over the communications channel to the receiver.

The Examiner fails to identify where the receiver generates and sends two different types of signals including a negative acknowledgement signal and a lost signal. Although Ayanoglu retransmits additional parity bits for erroneous data words, Ayanoglu fails to retransmitting systematic information bits when a lost signal is received or when no acknowledgment or negative acknowledgement is received. The anticipation rejection of claim 14 should be withdrawn.

Claim 22 is amended to include the canceled subject matter of dependent claim 31, so that the data packet as recited now includes:

> a first type of bits corresponding to actual information bits and a second type of bits corresponding to parity bits, the information bits being more important to decoding than the parity bits.

Ayanoglu fails to disclose packet processing circuitry in the receiver that:

> detect[s] the absence of a expected packet and to transmit a lost signal to the transmitter rather than a negative acknowledgement signal, and thereafter, to decode a first retransmission of the expected packet which includes the information bits.

Ayanoglu does not describe detecting the absence of an expected packet and generating a lost signal which is different than a negative acknowledgement signal. Moreover, when

retransmission is first requested by Ayanoglu with respect to a data block, it is with respect to sending additional parity bits and does not include information bits.

Claims 5, 6, 12, 13, 17-21, 29, 30, 33 and 34 stand rejected under 35 U.S.C. §103 as being unpatentable over Ayanoglu in view of "well-established teaching in the art." This rejection is respectfully traversed.

Applicants request that the Examiner provide evidence to support his contention of what is "well-established teaching in the art." The fact that the receiver "can" request "any specific bits from the transmitter" does not mean that Ayanoglu teaches the specifically claimed bits being requested by Ayanoglu. Postulating that certain claim functions *could be* implemented by a device in Ayanoglu is not the same thing as Ayanoglu disclosing the receiver actually performing these functions. The Examiner relies on improper hindsight based on what is claimed rather than what is actual taught in Ayanoglu.

The Federal Circuit has clearly found that any obviousness analysis must show there was motivation or suggestion in the prior to make the combination or modification. *In re Rouffet*, 149 F.3d 1350, 1359 (Fed. Cir. 1998). See also *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000). ("Close inherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one 'to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher.'")

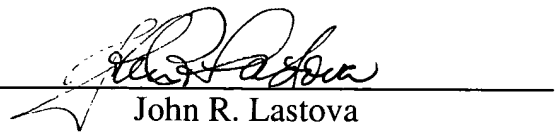
Claims 15 and 16 stand rejected under 35 U.S.C. 103 as being unpatentable over Ayanoglu in view of U.S. Patent 6,370,669 to Eroz. Claims 24 and 26-29 stand rejected under 35 U.S.C. 103 as being unpatentable over Ayanoglu in view of U.S. Patent 6,438,723 to Kalliojarvi. These rejections are respectfully traversed.

Neither Eroz nor Kalliojarvi remedy the deficiencies set forth above with respect to Ayanoglu. Therefore, these rejections are improper and should be withdrawn.

For the reasons set forth above, Applicants respectfully submit that the present application is now in condition for allowance. An early notice to that effect is earnestly solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
John R. Lastova
Reg. No. 33,149

JRL:at
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100